# APPENDIX

## A COMPENSATED DOLLAR

### APPENDIX I

#### SPECULATION IN GOLD

In the text it has been shown that there should be a slight margin between the two Government prices to protect the Government from speculation in gold. It has perhaps already been made clear enough that if there is a brassage charge of 1% and if it is the law that the Government cannot shift its price by more than 1% at a time, then there can be no speculation as between two dates immediately preceding and following a change of the Government prices; but it may nevertheless be worth while to illustrate by figures the importance and effect of this restriction. Suppose that, at some particular time, the weight of the virtual dollar or redemption-bullion were 38.7 grains (and of the mint-bullion 1% more, or 39.087 grains). Evidently if the virtual dollar were permitted to be raised by more than 1%, if, *e. g.*, the shift were from a virtual dollar of 38.7 grains to one of 40 grains, — so that (the brassage being 1% or .40) the mint-bullion would be 40.40 instead of 39.087 grains as it was before, — the Government might be embarrassed by speculation. The new pair of figures (40 and 40.40) would then *both* be above the range of the old pair (38.7 and 39.087); that is, the lower (40) of the new pair would be higher than the higher (39.087) of the old pair. When it became known or expected that these changes were to be made on a certain date, speculators could hurry bullion to the mint in advance of that date and for each 39.087 grains receive a gold dollar. With this dollar they could, as soon as the set date arrived, return and demand redemption in 40 grains. Thus they would win almost overnight 40 — 39.087, or .913 grains on each 39.087 grains originally held. The profits of the speculators would mean losses to the Government. Similarly if, in the opposite direction, the redemption-bullion were shifted too far, as, say, from 38.7 to 37 grains, owners of gold coin could get it redeemed in bullion at the old rate today and then mint this bullion at the new rate tomorrow. Each gold dollar could be redeemed today in 38.7 grains of gold bullion and tomorrow, under the new arrangement, gotten back from the mint for only 37.37 grains (37 grains plus 1% brassage), still leaving 38.7 — 37.37 grains or .33 grains of bullion for overnight profit on each original dollar

invested in the speculation. This profit would come out of the Government. Moreover this last form of speculation would threaten to deplete for the time the Government reserve or even to use it up entirely. If, however, the permissible shift in weight of the bullion dollar were not over 1% in either direction, no such profit would be possible.

In terms of gold prices this limitation on each shift means that the redemption-price (as well as the mint-price) shall never be permitted to shift at any one time by more than the brassage margin of, say, 1%. Thus, if the redemption-price is $12.40 and the mint-price, $12.28, this pair of prices may be changed upward to $12.41 and $12.29 respectively or to $12.50 and $12.38 respectively, but not further than $12.52 and $12.40 respectively. The lowest ($12.40) of the new pair of prices would then be no higher than the highest ($12.40) of the old pair. There would clearly be no profit in buying bullion of the Government today (at today's redemption-price of $12.40) and selling it back tomorrow (at tomorrow's mint-price of $12.40). Likewise the present prices, $12.40 and $12.28, may be changed downward to $12.39 and $12.27, respectively, but if they were depressed beyond $12.28 and $12.16, respectively, there would be a profit in selling bullion to the Government today at today's mint-price, $12.28, and buying it back tomorrow at tomorrow's redemption-price lower than $12.28.

The restriction in the shift to 1% at a time is ample to permit of all the movement ordinarily required, provided the shift is made often enough. It might be monthly or 12% per annum; it might be bimonthly or 6% per annum; it might be quarterly or 4% per annum. Moreover the margin for each shift instead of being 1% may be easily narrowed or widened by making the brassage $\frac{3}{4}$% or less or $1\frac{1}{2}$% or more.

As implied in the text, however, it might be advisable to limit somewhat narrowly the possible *reduction* in weight of the bullion dollar (*i.e., increase* in price of bullion) so as to prevent the possibility of speculating for a rise in the price of bullion over a period covering two or more shifts. For instance, if a great latitude were allowed, say 2% per month, it is conceivable (tho improbable) that the redemption-bullion should shrink as much as 2% in each of two successive months — *i. e.*, that the prices of bullion should rise 2% for two successive months. Then any holder of bullion could (if he should have been bold enough to risk the speculation) make a profit of 2% in a little over one month by first buying bullion of the Government and then reselling it to the Government after *holding it over the second shift*. Thus suppose the pair of prices should step up as fast as the 2% brassage permits, viz., as follows: —

|  | July | August | September |
|---|---|---|---|
| Redemption-Price | $12.40 | $12.65 | $12.90 |
| Mint-Price | $12.15 | $12.40 | $12.65 |

Evidently a speculator might buy bullion of the Government at $12.40 any time in July and sell it back to the Government at $12.65 in September after the lapse of only a trifle over a month. He would not be likely to do this, for he could have no assurance in July of what the prices would be in September so that ordinarily such speculation would be too risky to be attractive. But let us grant for the moment that at certain times such successive jumps upward of 2% per month might be looked forward to with sufficient confidence to tempt speculators to try to make 2% a month or at the rate of 24% per year. If this were true and such speculation were sufficiently large in volume it might be embarrassing to the Government by greatly reducing its reserve in the interval between July and September. It might, therefore, be advisable to make such speculation impossible by a narrower latitude. To effect this, the only restriction necessary is that *the rise should never exceed the minimum rate of interest on risky short time investments.* Such a rate is, of course, more than the rate on safe short time investments. Thus if 1% per quarter be deemed an inadequate latitude, it might readily be ½% a month or at the rate of 6% per annum, or even ¾% per month or at the rate of 9% per annum. No similar precaution need be taken against the opposite form of speculation — for a fall in the price of bullion. Such speculation would not injure the Government reserve, but rather strengthen it by the temporary addition of stocks of bullion which dealers can spare for a time and so sell to the Government at present high prices to buy back some time later at lower prices. Moreover it could be shown that such speculation, besides being harmless, would be unimportant, for the reason that the stock of gold bullion outside the Government vaults available for such operations is never likely to be large.

A distinction could therefore be made between the latitude allowed in the two directions. Thus if the brassage were 1% and the readjustment of the Government prices took place every month, we might especially restrict the upward movement of prices to 1% every three months, or 4% per year, while permitting a downward movement of 1% per month, or 12% per year.

It should be noted that there would still be a chance to speculate in gold in the market in a way not injurious to the Government. The market price of gold bullion may, as we have seen, be equal to the Government mint-price, or to the Government redemption-price, or to any figure between these two. Suppose that, during the first part of a particular quarter of a year, the market price were as low as possible, *i. e.*, were equal to the mint-price say $12.28 per ounce. Later it might be known or expected that the Government prices would be raised at the end of the quarter so that the mint-price would be $12.35, and consequently the market price *at least* $12.35. Evidently the market price, being now $12.28, will have to rise *at least* 7 cents by the end of the quarter, and speculators, foreseeing this, might buy in the

open market at $12.28 and sell later at $12.35 or higher. (They could not, of course, buy of the Government because the Government sells at 1% more than $12.28.) The result of such speculation would merely be a lull in minting gold toward the end of any quarter when a rise of price was expected and a gradual instead of a sudden rise in the market price. The opposite speculation for a fall might occur if the market price were at first equal to the redemption-price and a fall in Government prices were expected. Then there would be a lull in redemption at the end of the quarter and the fall of market prices would be gradual instead of sudden. These operations are entirely analogous to those connected with fluctuations in the foreign exchanges.

The limitations on the adjustment of the virtual dollar, etc., imposed for the purpose of preventing embarrassing speculation will, as we have seen, impair slightly the power of the adjustment to compensate for changes in the purchasing power of gold; yet a study of the actual movements of prices shows that it would easily be possible to avoid absolutely any possibility of embarrassing speculation and still permit, in all ordinary cases, the freedom of adjustment necessary to produce the desired regulation. If not, *i. e.*, if changes in prices are impending in the future so enormous that the system could not fully cope with them, there is all the greater need for adopting the system as a means of reducing these enormous fluctuations to a minimum!

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### APPENDIX II

#### ILLUSTRATIVE CALCULATIONS FOR 1896–1911

We may best picture how the plan would work by illustrating its various phases through numerical examples. Recent experience (since 1896) supplies a very severe test, while limiting the adjustment of the bullion dollar to 1% per quarter makes the test still more severe.

Taking the index numbers of the Bureau of Labor and changing them by simple proportion so that the price level of 1896 shall be 100%, let us consider what would have happened if on January 1, 1897, the system here described had been adopted. We assume that the weight of the coin dollar would have been left, as it is, at 25.8 grains. The index number for January,[1] 1897, was 1.5% below the par of 1896. Therefore, if the system here proposed had been in operation, it would have been impossible to have lowered the weight of the redemption-bullion; it was already at the minimum allowed, 25.8 grains. The new

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[1] The Bureau of Labor has published statistics giving the index number for each month beginning with 1900. Its previous index numbers are by years and not by months. The quarterly variations, 1897–99, have been calculated by means of the quarterly index numbers of Professor Commons for that period.